Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Allocation of Spectrum Below	)	ET Docket No. 94-32
5 GHz Transferred from	)	
Federal Government Use	)	

COMMENTS OF TETHERLESS ACCESS LTD.

Tetherless Access Ltd. ("TAL") hereby submits its comments in response to the Federal Communications Commission's (the "Commission") Notice of Proposed Rulemaking ("NPRM") in the above-referenced proceeding. TAL is a market leader in the development of software technology by which spread spectrum devices communicate. TAL is currently allied with a manufacturer of spread spectrum packet radio equipment to develop a "virtual wire" device that may be used to bypass telephone company loops for up to twenty miles.

In the NPRM, the Commission seeks comment on potential applications of 50 MHz that is being transferred immediately to private sector use. With respect to this proceeding, of the three bands identified for immediate transfer, TAL will address only the 2402-2417 MHz frequency segment that is currently allocated to ISM applications, amateur operations, and unlicensed low-power devices operating under parts 15.247 and 15.249 of the Rules. These latter rules allow certain devices employing spread-spectrum technologies or extremely limited transmitter power, or both.

TAL is concerned that introducing licensed uses of the 2402-2417 MHz band will undermine the usability of the 2400 MHz ISM band for unlicensed operations. Underlying the NPRM is the assumption that any such licensed access to the band would be subject to auction procedures to raise revenue for the Federal Government. The Commission should examine the relative values of auctioning the 2402-2417 MHz band versus the expansion of new services and rapidly growing numbers of users of unlicensed technologies.

As the Commission noted, the majority of the spread spectrum devices operating today in the ISM bands employ the 902-928 MHz band. Although this may be true now because of the relative ease of developing such products today as compared with 2400 MHz products, the 2400 MHz band is where the biggest growth of spread spectrum technology will take place. The 900 MHz band is becoming loaded by the very variety of applications the Commission sought to encourage. The 902-928 MHz band, however, is increasingly congested. More ominously, there is a pending proposal for deployment of licensed Automatic Vehicle Monitoring (AVM) systems, which could cause many Part 15 users to cease operation completely. Given the current large number of Part 15 devices on this band and their rapidly growing numbers, we see the 902-928 MHz band becoming increasingly unusable for new technologies.

The only practical and available refuges today from such displacement from the 900 MHz band are the other ISM bands, at 5800 MHz and particularly the 2400 MHz band. The Commission notes, accurately, that "it is likely that use of the 2400 MHz band by spread spectrum devices will increase." This is an understatement. The reality is that the great majority of new product development in the computer-communications industry, and the creation of standards, is focused explicitly on the 2400 MHz ISM band.

International considerations also dictate that the present status of the band must not be undercut. The 2400 MHz band is used worldwide for true Industrial-Scientific-Medical devices including microwave ovens and, region-by-region or country-by-country, the band is being made available for communications similar to the current U.S. operations under §15.247/249. Frequency compatibility across the globe is an important goal that must not be undermined by the introduction of new, potentially overwhelming, interference sources.

The Institute of Electrical and Electronic Engineers, Inc. ("IEEE") Project 802 Local and Metropolitan Area Network Standards Committee has been engaged since September 1990 in preparing a Local Area Network standard for data communication over a radio medium and has participated in the rounds of comments and reply comments in the PCS proceeding. The IEEE standards activity has encompassed the interests and energies of a very wide

constituency of data-communications companies. The IEEE activity has shifted from its early focus on the 900 MHz band, to its emphasis today on the 2400 MHz band. There is currently a letter ballot out for its proposed standard, and given industry agreement, an adopted standard and products should follow in the second half of 1995. This standard will require use of the entire 83.5 MHz that is currently available in this band.

At this time, the 2400 MHz band is severely impacted by microwave ovens and other uses, as the NTIA demonstrates in its Preliminary Spectrum Reallocation Report (the "Report"). In particular, the Report concludes that communications services, if limited to the central portion of the band (2425-2475 MHz), would have to employ considerable RF power. Moreover, even use of the transferred spectrum (2402-2417 MHz), which is thought to be less burdened by microwave ovens, requires robust modulation schemes and technologies including advanced error correction. Although TAL and other companies are developing such protocols for this band, these protocols do not leave much bandwidth to apply to the new communications technologies themselves. Introduction of additional high-powered licensed services, coupled with §15.247, which effectively requires use of the whole band for, *e.g.*, frequency hopping technologies or direct sequence systems, would present an overwhelming burden on such new technologies.

The initiative led by Apple Computer Inc. for new Data-PCS frequencies in the PCS proceedings, and the widespread support given Data-PCS by the wireless industry, was triggered in part by this outlook for the ISM bands. At this juncture, immediately following release of the Commission's PCS Memorandum Opinion and Order, it is by no means assured that frequencies useful for "nomadic" computing devices will become available, in adequate quantity, for some years. To disable the single band available today for development of such devices, the 2400 MHz band, by introducing new licensed services prior to "last link" clearing of incumbents in and

adjacent to the new PCS band, would leave essentially no usable spectrum in the near term for the wireless communications industry.

Respectfully submitted,

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